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ABSTRACT

This discription of a Follow Through Implementation Project summarizes research related to environmental variables and intellectual performance, and describes an environmental intervention program that manipulates these variables. Analysis of environmental data collected on 33 disadvantaged families of first grade children suggested that their natural environment contributed heavily to lack of achievement. Therefore, the parent involvement program, based on two conceptual frameworks, was designed to modify the environment. One framework illustrated the relationships among learning objectives, learning variables, and the learning environments of home and school. The second framework organized parent involvement activities aimed at a reduction of parental alienation, an increase of parent participation in class, and an application of classroom principles at home. The program, which involved demonstration, observation, and guided participation, was implemented by parent involvement coordinators who attended a 6-week summer training session and then returned to their communities to train family liaison workers. Follow up visits to coordinators were made by field representatives from the Arizona Center. (DR)

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RESEARCH AND CONSULTATION IN
THE NATURAL ENVIRONMENT

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RESEARCH AND CONSULTATION IN THE NATURAL ENVIRONMENT¹

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INTRODUCTION

There is unmistakable pressure in these times to make psychological research relevant to current social problems, although psychologists are neither agreed among themselves about how much the behavioral sciences are prepared to contribute to the solution of such problems, nor upon the degree to which scientists are forced to give up their objective perspective as they become social activists (Nelson, 1969). Some disillusionment with research oriented toward social problems may arise from the limited success achieved in the application of psychology to problems of national concern. A striking example of such disillusionment is found in the research and intervention programs initiated under the Economic Opportunity Act and the Elementary and Secondary Education Act. The typical tactic in intervention programs has been to alter the content and processes which characterize the school classroom, although some programs have also attempted to effect alterations in parent behavior (vide, Gray & Klaus, 1969). While some projects have produced impressive results (Weikart, 1967), reviews of research on intervention efforts generally

present unenthusiastic conclusions about the effectiveness of most intervention programs (Swift, 1964, O'Brien & Lopate, 1968; Horowitz & Paden, 1969).

If children are as malleable in their early years as some influential psychologists argue (Hunt, 1961; Bloom, 1964), why is it so difficult to demonstrate lasting benefits from even those early education programs which are based on carefully formulated psychological principles? Investigations of environmental variables which are related to intellectual performance provide testable hypotheses related to this question. This paper summarizes some of the research conducted to identify environmental variables which are related to intellectual performance, and then describes an environmental intervention program designed to manipulate these variables. This program is a component of the system of training and services which comprises the Tucson Early Education Model (TEEM).

RESEARCH IN THE NATURAL ENVIRONMENT

The relationships between various sociological indices and intellectual performance have been amply demonstrated. The variable which is central to most of this research is socioeconomic status (Miner, 1957; Lavin, 1965). Lavin (1965) states that an index of socioeconomic status (SES) is capable of predicting school performance because it is a summarizing variable. He says that "SES symbolizes a variety of values, attitudes, and motivations related to academic performance [p. 123]." In all likelihood the index of SES

summarizes a good deal more than this statement indicates, and it is precisely for this reason that the usefulness of such measures is limited. These indices are so gross that more is obscured than revealed. As a result, they provide no guidance for the design of programs to compensate for debilitating environments, nor to build upon the advantages provided by facilitating environments.

The limitations of traditional sociological measures have led to efforts to get beyond global indices, and to obtain environmental data capable of providing directions for program development. What we need to know is what happens, or fails to happen, in the home and community environments of children who are unable to cope with school programs as they exist. The independent variables in our investigations of learning environments should be the behaviors of socializing agents.

Dave (1963) and Wolf (1964) made a significant contribution to our knowledge in this area by identifying and measuring a number of environmental variables and the characteristics which define them. They found a multiple correlation of $+0.80$ between their environmental variables and school achievement, and a correlation of $+0.69$ between the environmental measures and I.Q. in a stratified sample of elementary school children in a midwestern community.

Building upon this work, investigators at the Arizona Center for Early Childhood Education have sought to determine the applicability of such variables in populations of young minority group children in the Southwest. In the first of these investigations

(Henderson & Merriitt, 1968), it was demonstrated that a modification of the Wolf scale could discriminate clearly between higher and lower performing Mexican-American children. A follow-up investigation (Henderson, 1969) demonstrated that the environmental process variables which had been obtained when the Ss entered first grade predicted reading achievement on the California Reading Test at the end of the third grade with correlation coefficients significant at the .05 level or better for each of the nine environment variables measured.

These and similar investigations (vide, Garber, McIntyre & Ware, 1969) provide evidence that environmental characteristics are related to achievement. The disadvantage of the Wolf scale, and of the Arizona adaptation of it, is that the focused interview and rating scale procedures required by this approach make data collection and analysis expensive and time consuming. The most recent environmental research has therefore focused on two objectives. First, we have attempted to produce an instrument which would make it possible to obtain environmental data more economically than has been possible in the past. Second, we attempted to construct items which would elicit data on learning variables hypothesized on the basis of the environmental research cited above. The hypothesized learning variables were aspiration level, environmental stimulation, guidance, models, and reinforcement. Of the forms of the interview schedules which were field tested, a Likert format schedule now seems most promising.

Data on thirty-three families of disadvantaged first grade children in Fort Worth, Texas, were obtained with this form. The first five factors to emerge in the analysis do not display complete logical consistency, but except for factor four, they load predominantly on the

hypothesized variables. Provisional labels assigned to factors one through three are environmental stimulation, models, and guidance, while factor five is labeled reinforcement. Items intended to measure aspiration are found scattered among the factors.

The factors from this analysis were correlated against a deviation IQ score (DIQ) on the Otis Lennon test, which served as a criterion reference measure. The multiple R for the first five factors and the DIQ was $+.63$. These results, though tentative, are encouraging, because they demonstrate that the predictive validity of the environmental variables is maintained with the new instrument, and because they support the possibility of identifying separate learning categories which might be manipulated in programmatic efforts.

FROM RESEARCH TO APPLICATION: THE PARENT INVOLVEMENT PROGRAM

The relationships indicated in these investigations suggest that the natural environment contributes heavily to achievement. The added knowledge that compensatory education programs have fallen short of desired results, and that the quality of school programs contributes less to the variance in achievement for children from facilitating environments than for children from more impoverished environments, suggests that programs which are confined to the four walls of the classroom and its environs cannot successfully achieve our educational objectives.

The parent involvement component of the Tucson Early Education Model (TEEM) has been designed to modify the natural environment in

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ways that support and supplement the instructional component which is carried out in the classroom. The design of the parent involvement (PI) program is guided by two conceptual frameworks. The first of these is a model (Figure 1) which has been derived from the environmental data cited earlier, as these are conceptually related to a set of educational objectives. The model illustrates the relationships among four classes of learning objectives, five learning variables, and the learning environments provided by the school and the home. Taking cell Ib·E·H as an example, PI personnel may generate a range of activities which the family could provide with a minimum of resources to introduce environmental stimulation designed to foster skills in the intellectual base category.

Insert Figure 1 about here

The second framework is a sequence of frames which order activities in a manner analogous to programmed instruction. Target families in Follow Through programs are often those who have been most alienated from the schools through a long history of aversive experiences with it. While most of the parents have no contact with the school, a few of them are vocal and actively involved in organizations such as the Policy Advisory Committee (PAC). The PI program must therefore provide for parents at both ends of the involvement continuum, and at the same time provide continuity of effort. Since different parents enter the program at different points, depending upon their current level of

participation, the program provides for diverse needs and at the same time provides continuity.

Frame one of the program has two principal objectives. The first is to reduce parental feelings of alienation from the school by initiating frequent, always positive, communications to the home concerning the child's progress in school. Many parents have learned to expect only negative communications from the school, and this expectation must be changed before further progress can be made.

The second goal in this frame is to begin to acquaint parents with the objectives of the instructional program. This is particularly important for any program dedicated to new objectives. For example, as the parent learns that his child is asking more questions, and different kinds of questions, and that the teacher places a high value on this behavior, he may begin to understand that questioning is an important behavior. Later, other information seeking skills will be identified in the same way.

Frame two is intended to elicit from parents responses that reinforce the child's school related behaviors. For example, a parent may be asked to question a child concerning one of his school products which has been sent home, thereby providing reinforcement through parental attention. This example is taken from the Mb•R•H cell of the model presented in figure 1.

Frame three includes a variety of opportunities for parents to participate in guided observation of classroom activities. Observation should be preceded by an orientation intended to focus attention on particular activities and procedures in the classroom. For example,

early observation might focus on the use of positive reinforcement by classroom adults. Discussions following observation can further clarify the teacher or aide's reinforcement of approximations to a desired behavior, and identify a variety of reinforcers used to accomplish this. Later, attention may be focused on the use of the reading environment, and follow-up discussion can indicate the importance of modeling as a means of influencing children to use reading materials. This example builds upon the relationship between the cells for Mb·M·H and Mb·M·S.

Frame four is guided participation in the classroom. Following opportunities to learn classroom procedures through observation, parents are invited to serve as volunteers in the classroom, using their own special skills and experience within the program framework. A father who works with wood might participate with a group of children, helping them to discriminate similarities and differences in grain and density of different woods. He might guide them in speculating about which woods might be best suited to particular purposes. This example involves the guidance learning variable and the intellectual base category of objectives.

Frame five is designed to promote transfer of principles which parents have observed and applied in the classrooms, to application in the home environment. Small groups of parents, working with parent involvement coordinators and psychological services personnel will discuss their classroom experiences, and suggest ways in which the home may support and supplement the activities of the instructional program.

Frame six is the point at which branching will begin to provide for different interest of parents. Some may wish to learn behavioral recording techniques and other skills useful for classroom aides or psychological services aides. They may follow their specialized interests by working as volunteers in either of these program components. In some communities it will be possible to help them become involved in training programs for new careers. Other parents may wish to gain added skills in working with other parents in their neighborhoods and may assume paraprofessional positions in the PI program. Others may wish to have a more direct influence on educational policy, and should be provided with knowledge of the administrative structure of the schools and of the political pressures which influence educational policy.

The alternatives suggested for this frame are intended merely to illustrate the possibilities, because the intent of the program is that by this frame parents will be sufficiently aware of a number of alternatives that they may help to develop those alternatives identified by the parent group itself.

PROGRAM IMPLEMENTATION

The implementation strategies for the Tucson Early Education Model are designed to bring a coordinated system of training and services to bear on a set of interrelated social and educational problems which affect the quality of education for disadvantaged children. The three components of this coordinated system are the instructional program,

the parent involvement program, and a psychological services program. Parent involvement coordinators are given their initial training in an intensive six week training program during the summer. Upon their return to their home communities they are responsible for the training of family liaison workers. Continuous training to follow up on the summer institute is provided for the parent involvement coordinators through periodic visits by field representatives from the Arizona Center for Early Childhood Education. At each level, including the summer training, field representative visits, the training conducted by PI coordinators for parent liaison workers, and in the direct work with parents, the consultation process is based upon demonstration, observation, and guided participation, rather than upon didactic presentation.

CONCLUSION

Compensatory education programs for young children have been less successful than early optimism predicted. In many cases this failure might in part be ascribed to the lack of provisions for continuity in the funding programs which support these efforts. The national Follow Through Program has taken positive measures to provide this continuity. Even with such continuity, it does not seem likely that programs which attend only to the learning which is planned to take place in the classroom can make a lasting impact, since such a large proportion of the variance in achievement and ability measures is attributable to differences in the natural environments in which

children are socialized. A model for the development of procedures and content for intervention in the home has been developed to complement and supplement the innovative instructional program being disseminated in the Follow Through Implementation Project of the Arizona Center for Early Childhood Education. The model, which is based on research in the natural environments of children, makes it possible to articulate intervention strategies in both the school and the home to the same objectives. It is anticipated that the successful implementation of this program will serve to emphasize the complementary roles of the school and the home as loci of intellectual development. The intervention strategy is further strengthened by the support and training functions provided by the psychological services component of the system.

If the past record of accomplishment in the application of psychology to social problems has been disappointing, it may be because efforts have been too narrowly restricted in the range of theory and principles called upon in any single program. This program offers an alternative to narrowly focused intervention.

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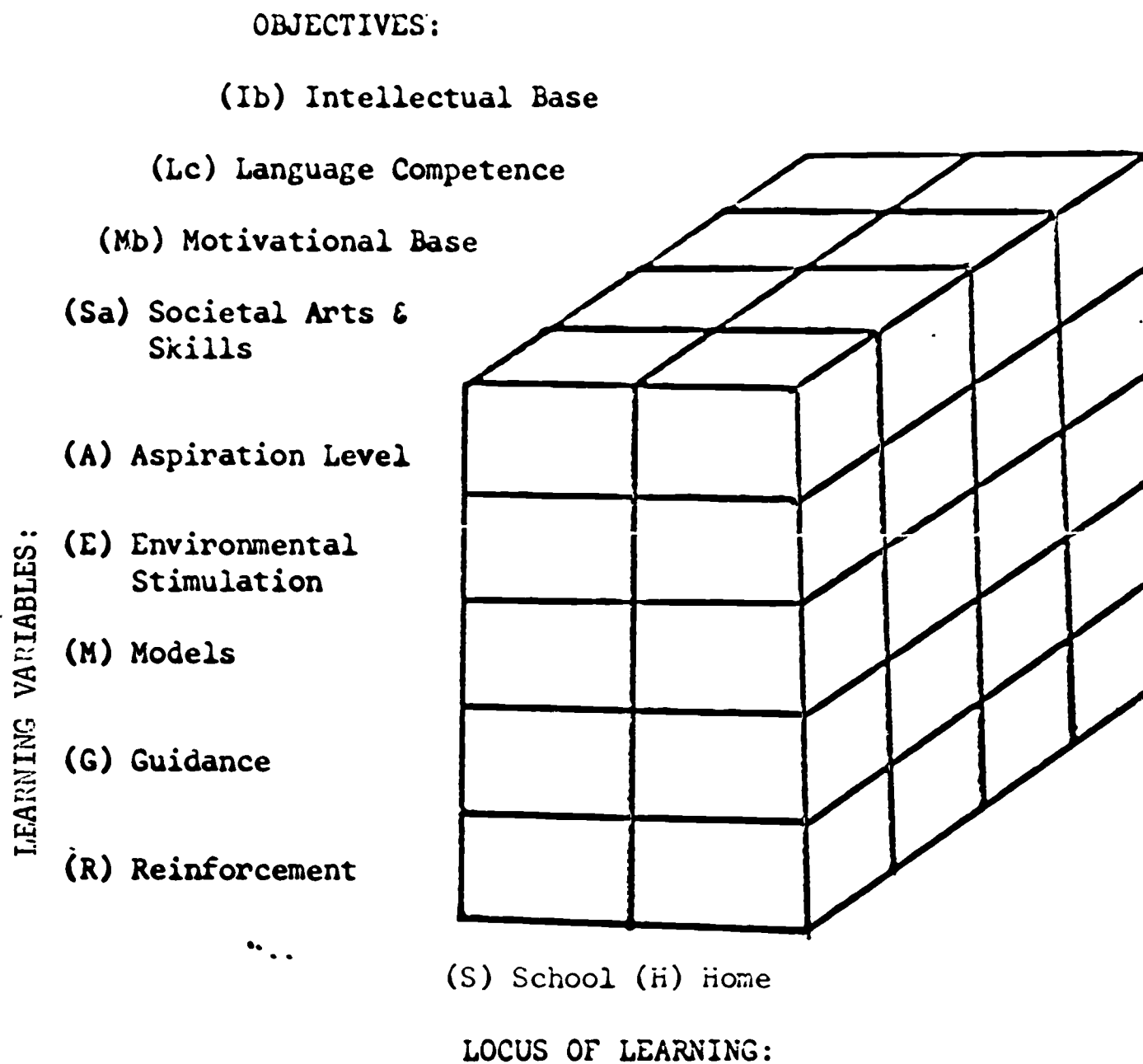


Figure 1. Interrelationships Among Learning Variables, Objectives, and Environments